DRAWING ROCKS AT PRIMARY SCHOOL: 
A TOOL FOR EMERGING MISCONCEPTIONS 
AND PROMOTING CONCEPTUAL CHANGE

Luca Benciolini (1) and Giuseppe Muscio (2)
(1) Dipartimento di Fisica, Chimica e Ambiente, Università di Udine (Italy)
(2) Museo Friulano di Storia Naturale (Udine, Italy)

A) Pupils and rock samples

In order to investigate spontaneous children ideas about rock samples, the Museo Friulano di Storia Naturale in collaboration with the University of Udine submitted six classrooms of fifth and fourth grade-students to a specific test. 133 students without a specific background in Earth Sciences were asked to give: a) written description of a rock sample; b) a drawing of the sample; c) a written short story about the sample.

The selected 35 samples in the opinion of the researchers contain 255 geologically relevant self-evident characters such as fossils, clastic textures, planar discontinuities and so on. Children spontaneously described stones as opaque solids, not as representative samples. These misconceptions depend by the lack of laboratory experience. Face to an outcrop and sampling with a hammer, the sample surface should suddenly become representative of an interior, not only of an external side.

B) What they perceive

Geological objects as foliations, strata, laminations are reduced to 2D-descriptions and are consequently identified as “lines, strips, petroglifs” Fossils or clasts in a conglomerate are considered as attached to the sample, not as elements of the sample. Pupils coherently describe stones as opaque solids, not as representative samples. These misconceptions depend by the lack of laboratory experience. Face to an outcrop and sampling with a hammer, the sample surface should suddenly become representative of an interior, not only of an external side.

C) Description strategies: drawing vs text coherence

In order to investigate children ability to describe a rock sample, the Museo Friulano di Storia Naturale in collaboration with the University of Udine submitted six classrooms of fifth and fourth grade-students to a specific test. 133 students without a specific background in Earth Sciences were asked to give: a) written description of a rock sample; b) a drawing of the sample; c) a written short story about the sample.

Twenty undergraduate students in natural sciences at the University of Udine submitted six classrooms of fifth and fourth grade-students to a specific test. 133 students without a specific background in Earth Sciences were asked to give: a) written description of a rock sample; b) a drawing of the sample; c) a written short story about the sample.

CONCLUSIONS

Drawing is commonly considered a merely artistic activity mainly devoted to communicate emotions. Differently, scientific drawing is based on a careful observation and choice of features useful to be studied in deep. We suggest drawing and description as being an informal laboratory activity that could be given before of boring systematic classification of natural objects. Drawing activities and laboratory book notes could represent useful strategies in order to stimulate a specific skill in observing reality, to understand complex and heterogeneous natural objects and develop coherence and scientific thinking. Conceptual change is promoted by comparing children experiences with their previous ideas.